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United States Patent [19][11] **Patent Number:** **6,011,776****Berthaud et al.**[45] **Date of Patent:** **Jan. 4, 2000**[54] **DYNAMIC BANDWIDTH ESTIMATION AND ADAPTATION IN HIGH SPEED PACKET SWITCHING NETWORKS**[75] **Inventors:** Jean-Marc Berthaud, Villeneuve Loubet; Claude Galand, Cagnes sur Mer; Pierre-Andre Foriel, St. Laurent du Var; Stephane Lengelle, Antibes; Laurent Nicolas, Villeneuve Loubet, all of France[73] **Assignee:** International Business Machines Corporation, Armonk, N.Y.[21] **Appl. No.:** 08/786,916[22] **Filed:** Jan. 22, 1997[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁷** G01R 31/08[52] **U.S. Cl.** 370/232; 370/431[58] **Field of Search** 370/230, 232, 370/233, 234, 235, 431, 437, 468[56] **References Cited**

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Primary Examiner—Chi H. Pham*Assistant Examiner*—Kim T. Nguyen*Attorney, Agent, or Firm*—Gerald R. Woods[57] **ABSTRACT**

A system adapts access to a packet switching network. A dynamic bandwidth adaptation continuously monitors the mean bit rate of a signal source and the loss probability of a connection in the network. A filtering means removes noise from the mean bit rate and loss probability. A test means determine whether the values fall within a pre-defined acceptable adaptation region in a mean bit rate, loss probability plane. Triggering means initiate bandwidth adaptation procedures when the values fall outside of the region which in turn, initiate means for acquiring a new connection bandwidth, and determining new parameters for the adaptation mechanism.

9 Claims, 7 Drawing Sheets